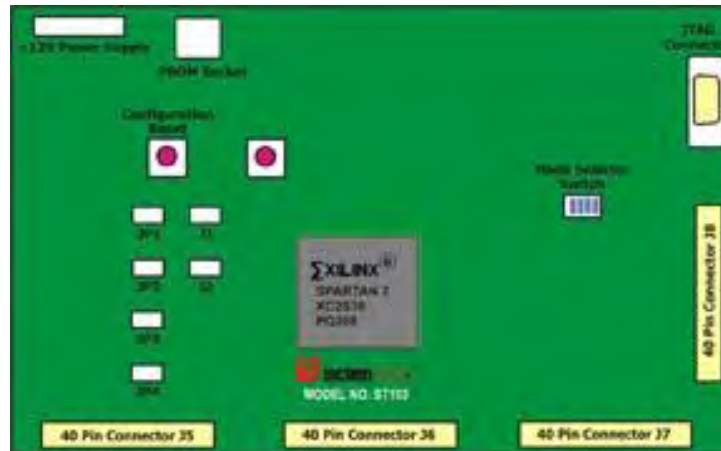


Scientech VLSI Development Platform:-

Model No. : ST103



A: Explanation of System Architecture:-

- 1) FPGA (XILINX Spartan2) Application Development Board (30K Gates, 972 logic cells), I/O ports 132, Number of pins 208.
- 2) The I/O experiments board.
- 3) Webpack 4.2 Development Software CD.
- 4) Sample Code for Board Testing.
- 5) Operational manual for reference.

B: Functional Explanation of Development Board:-


- 1) The FPGA includes 30K gate count, and its interior circuit uses the SRAM cells architecture. Therefore its speed has reached several hundred MHz.
- 2) Data can be stored in an EPROM as a final design depends on the circuit size.
- 3) The connecting pins of FPGA could arbitrarily set, and the input / output port need not use the single wire to be connected for signal output in order to avoid the experimental mistake to destroy the board.
- 4) It has four 40pin IDC connector to interface the I/O board & any digital design.

- 5) Mode select for downloading bit stream into FPGA or EPROM.
- 6) On board user selectable clock up to 20MHz.
- 7) Device can be program in a master / slave serial mode.
- 8) A status LED and pushbutton for basic I/O

C: Specification of ST103:-



- 1) **Xilinx Family:**
SPARTAN 2
XC2S30PQ208
- 2) **Device Density:**
30K gates
972 Logic Cells
- 3) **On board** +5V, +3.3V, +2.5V supply to FPGA & other hardware circuit.
- 4) **On board**, 2 Crystal 8MHz & 20MHz.
- 5) **Master Reset** key for hardware reset
Program Key for FPGA reconfiguration
- 6) **Onboard** EPROM Socket in Quad package for FPGA backup
- 7) **Configuration Methods:**
JTAG Interface (Boundary Scan)
Slave Serial Interface
PROM Interface
- 8) **40 pin**, 4 header connector for external I/O's
- 9) **Number of I/O's** 132

VLSI APPLICATION BOARDS

Application Boards for ST102 / ST103 / ST104	Features	Applications	Look wise
VB 1 Digital Input Output	It includes 8 logic Input, 8 logic Output, 4 multiplex 7-Segments Display, 3-Pushbutton switch etc.	Can be used for any combinational & sequential logic.	

<p>VB 2 Peripheral Interface</p>	<p>It includes Serial Port , VGA Port , PS2 Port, 4 Logic Input, etc.</p>	<p>Can be used for Serial Port, VGA Port, and PS2 Port Core Design.</p>	 <p>The image shows a black circuit board labeled 'Interface Board 2 For ST 102'. It features a 4-digit 7-seg display at the top left, a 4-pin output header, a 4-pin input header, a 9-pin serial port, a 15-pin VGA port, and a 6-pin PS2 port. The scienteCH logo is at the bottom left.</p>
<p>VB 3 Analog to Digital</p>	<p>It Includes 2 8-bit ADC.</p>	<p>Can be used to interface analog, sensor signal to FPGA board.</p>	 <p>The image shows a black circuit board labeled 'Interface Board 3 For ST 102'. It features two 8-bit ADCs labeled 'adc1' and 'adc2'. It has multiple pin headers for analog signals and a 16-pin digital output header. The scienteCH logo is at the bottom left.</p>
<p>VB 4 Digital to Analog</p>	<p>It includes 2 8-bit DAC</p>	<p>Can be used to generate triangular, Square, Sine, Ramp signal.</p>	 <p>The image shows a black circuit board labeled 'Interface Board 4 For ST 102'. It features two 8-bit DACs labeled 'DAC1' and 'DAC2'. It has multiple pin headers for digital inputs and analog outputs. The scienteCH logo is at the bottom left.</p>
<p>VB 5 Static RAM</p>	<p>It includes 2 32KX8 SRAM</p>	<p>Can be used to design external memory interface with FPGA.</p>	 <p>The image shows a black circuit board labeled 'Interface Board 5 For ST 102'. It features two 32Kx8 SRAMs labeled 'SRAM1' and 'SRAM2'. It has multiple pin headers for digital signals. The scienteCH logo is at the bottom left.</p>
<p>VB 6 Traffic Light Controller</p>	<p>It include complete TLC mimic with LED indication.</p>	<p>Can be used to design complete TLC Application.</p>	 <p>The image shows a black circuit board labeled 'Interface Board 6 For ST102103/104'. It features a traffic light controller circuit with four LEDs (red, yellow, green) for each of the four directions (North, South, East, West). It has multiple pin headers for digital signals. The scienteCH logo is at the bottom left.</p>

<p>VB 7 Real Time Clock</p>	<p>It includes complete digital clock.</p>	<p>Can be used to design complete Real time Clock Application.</p>	 <p>The image shows a black circuit board labeled 'Interface Board 7 For ST162/932104'. It features three 7-segment displays at the top, each showing '88'. Below the displays are several push buttons and LEDs. The board has a red 'scientek' logo at the bottom left.</p>
<p>VB 8 LED Flasher</p>	<p>It includes 16 LED's with frequency select.</p>	<p>Can be used to design complete LED flasher (disco light) Application with frequency & mode select.</p>	 <p>The image shows a black circuit board labeled 'Interface Board 8 For ST160/103104'. It features 16 red LEDs arranged in two rows of eight. There are several push buttons and a frequency selector knob. The board has a red 'scientek' logo at the bottom left.</p>
<p>VB 9 HEX Keypad</p>	<p>It includes hex(Telephone) keypad with seven segment display.</p>	<p>Can be used to design complete Hex keypad Application.</p>	 <p>The image shows a black circuit board labeled 'Interface Board 9 For ST162/103104'. It features a 12-key hexadecimal keypad on the left and a 7-segment display on the right showing '8'. There are several push buttons and LEDs. The board has a red 'scientek' logo at the bottom left.</p>
<p>VB 10 LCD Character Display</p>	<p>It includes 16X2 LCD display</p>	<p>Can be used to display like temperature, voltage, frequency display etc.</p>	 <p>The image shows a black circuit board labeled 'Interface Board 10 For ST162/103104'. It features a 16x2 character LCD display in the center. There are several push buttons and a potentiometer. The board has a red 'scientek' logo at the bottom left.</p>
<p>VB 11 Rotary Encoder</p>	<p>It includes 2 rotary encoder.</p>	<p>Can be used for frequency, voltage control etc.</p>	 <p>The image shows a black circuit board labeled 'Interface Board 11 For ST 162/932104'. It features two rotary encoders at the bottom. There are several push buttons and LEDs. The board has a red 'scientek' logo at the bottom left.</p>

<p>VB 12 Alpha Numeric Segment Display</p>	<p>It includes 9 alpha numeric displays.</p>	<p>Can be used to display name or value.</p>	 <p>Interface Board 12 For ST162163/104</p>
<p>VB 13 Relay Control</p>	<p>It includes relay with 4 digit seven segment display for time setting.</p>	<p>Can be used to design application like relay control with timer.</p>	 <p>Interface Board 13 For ST162163/104</p>
<p>VB 14 Stepper Motor</p>	<p>It includes Stepper Motor of 5V / 300mA with provision of four wires for external motor interface of high rating with driver circuit.</p>	<p>Can be used to design Stepper Motor Application with directional control.</p>	 <p>Interface Board 14 For ST162163/104</p>
<p>VB 15 LED Matrix Display</p>	<p>It includes 4 number of 5X7 LED Matrix Display</p>	<p>Can be used to design Rolling Display Panels.</p>	 <p>Interface Board 15 For ST162163/104</p>
<p>VB 16 Sensor & Displacement</p>	<p>It includes one temperature sensor & one displacement section.</p>	<p>Can be used to design Applications like temperature sensor interface with FPGA and display temperature on the character LCD & Displacement measurement on the LCD or PC through FPGA.</p>	 <p>Interface Board 16 For ST162163/104</p>

Experiments which can be perform:-

Basic Digital Logic, Multiplexer / Demultiplexer, Counter, Register, Encoder / Decoder, ALU, Memory, Address Decoder etc.

Applications which can be perform:-

Sensor & Control Applications

DSP Applications

List of Accessories:-

1. JTAG Cable for downloading
2. Power Supply SMPS
3. User Manual
4. XILINX Webpack 8.1 Software CD

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